

Performance Task- Planning
Coastal Housing Development Council

Your team works for the Coastal Housing Development Council. This council provides guidelines for local construction companies about using up to date safety regulations for updating houses built along the coastline and river systems in the coastal plain region of your state. Part of your job is to build models of homes and to test their effectiveness against a natural hazard such as a hurricane and resulting flooding. The homes will be tested for strength against strong winds, rain, and storm surge.

In your group decide on the following criteria. Make sure to include all ideas with your house plans.

1. Decide the location of your group's house- Indicate the location along the coastline or inner coastline of the state map. Provide two reasons why you are choosing the location for your house.

2 reasons for your location

a. _____

b. _____

Planning for Design

2. Draw a picture of your model home indicating how you are considering safety regulations for the house for protection against strong winds and water (draw picture on half-inch graph paper).

Provide students with the listing of materials. Parameters- Remember this is a model of a home that will be tested.

1. Homes have to be at least 1 foot tall.
 2. Homes square footage should be at least 6" by 6"
 3. Designers can only use ½ cup of glue
 4. Designers can only use 2' of duck tape.
3. Decide which materials you will use to build your house. List reasons why you chose the specific materials.

Reasons for specific materials

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

Materials

Popsicle sticks – represent wood
Toothpick—wood and binder
Cardboard—siding
Modeling clay or model magic—represent brick or cement
Pipe Insulation –structural foundation
Straws—structural foundation
Rubber bands -- binder
Duck tape-- binder
Masking tape—binder
Glue—binder

Criteria for House Structure Testing Time

Each group will use the criteria sheet for evaluating different group plans.

If the structure stands after testing then it is a “yes”

If the structure falls down after testing then it is a “no”

Criteria

1. Level 1- Category 1 Hurricane
 - a. Low speed at 2 foot away-- if yes go to next step- if no-- redesign
 - b. Low speed at 1 foot away-- if yes go to next step- if no—redesign
 - c. No speed—horrible rain storm (pouring at least a half gallon of water on the structure) -- if yes to the next step-- if no—redesign
2. Level 2 – Category 2 Hurricane
 - d. Medium speed at 2 foot away-- if yes go to next step- if no-- redesign
 - e. Medium speed at 1 foot away-- if yes go to next step- if no—redesign
 - f. No speed-- horrible rain storm (pouring at least a gallon of water on the structure)-- if yes—go to next step—if no---redesign- if no
3. Level 3- Category 3 Hurricane
 - g. Fast speed at 2 foot away-- if yes go to next step- if no-- redesign
 - h. Fast speed at 1 foot away-- if yes go to next step- if no—redesign
 - i. Horrible rain storm (pouring at least a gallon and a half of water on the structure) -- if yes—go to next step -- if no—redesign
4. Level 4-Category 4 Hurricane
 - j. Suitable structure

Category	Wind Speed (mph)	Damage at Landfall	Storm Surge (feet)
1	74-95	Minimal	4-5
2	96-110	Moderate	6-8
3	111-130	Extensive	9-12
4	131-155	Extreme	13-18
5	Over 155	Catastrophic	19+

How well did your group’s house do in the testing? _____

Describe what happened to the house during testing? Why did it happen?

Redesign

Based on the testing results, what ideas does your group have for redesigning the house?

Redesign

Draw a picture of your redesigned house. How is this house different from your original? (use of materials etc.)

Evaluate
Summative Assessment

Explain how a specific structure of your home was build for the purpose of withstanding strong winds.

What are some cause and effects situations that occur during a hurricane that could affect the home?

Did your house structure make a difference in a hurricane? Why or why not?

What have you learned about designing a home for a hurricane?
